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EXAMINER

LI, AIQUN

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4151

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,722	Applicant(s) KARAGIANNI ET AL.	
	Examiner AIQUN LI	Art Unit 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 1-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 42-61 is/are rejected.
- 7) ☒ Claim(s) 57 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 57 is objected to because of the following informalities: claim 57 recites “from 65 to 99 mol% of units having a betaine group” in line 2, and “from 55 to 1 mol% of alkoxyated units” in line 3, they add up to more than 100% amount ; Further, claim 57 recites “optionally: from 70 to 90 mole%, of units having a betaine group, and from 10 to 30 mol%, of alkoxyated units ” in line 4-6. The combination of the two compositions adds up to more than 100% amount. Still further, the commas after “mole%” in line 5 and 6 are not necessary. Appropriate correction is required.
2. Claim 45 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 42 requires alkoxyated units in line 6, claim 45 makes it optional.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 57 and 60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

6. In the present instance, claim 57 recites the broad recitation "from 65 to 99 mol% of units having a betaine group" in line 2, and "from 55 to 1 mol% of alkoxyated units" in line 3, and the claim also recites "from 70 to 90 mole%, of units having a betaine group, and from 10 to 30 mol%, of alkoxyated units " in line 4-6, which is the narrower statement of the range/limitation.

7. Claim 60 recites the broad recitation "between 0.1% and 10%", and the claim also recites "between 1% and 3%" in line 2, which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 42-48, 53-58 are rejected under 35 U.S.C. 102(b) as being anticipated by Samour (US Patent No. 3671502).

10. Regarding claim 42, 57 and 58, Samour teaches a neutral, hydrophilic copolymer of monomers consisting a carboxybetaine or sulfobetaine (claim 1), which reads on the claimed units with a betaine group having a cationic group and an anionic group; and a polyalkylene glycol acrylate/methacrylate (claim 1), which reads on the claimed alkoxyated units; or hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropylacrylate, hydroxypropylmethacrylate, or polyglycerol acrylate/methacrylate (claim 1), which reads on the claimed hydroxylated units.

Samour further teaches the polymer comprising 9g of N-methacryloyloxyethyl-N, N-dimethyl-N,3-propyl-sulfobetaine and 1g of hydroxyethylmethacrylate (claims 4 and 6, and Example, col.2, line 46-47), which is equivalent to 81 mol% of sulfobetaine unit, and 19% of hydroxylated unit, based on the molecular mass of N-methacryloyloxyethyl-N, N-dimethyl-N,3-propyl-sulfobetaine (279 g/mole) and hydroxyethylmethacrylate (130 g/mole), which reads on the claimed range.

11. Regarding claim 43, Samour teaches the betaine is sulfobetaine (claim 1) such as N-methacryloyloxyethyl-N, N-dimethyl-N,3-propyl-sulfobetaine and 1g of

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hydroxyethylmetacrylate (claims 4 and 6) or carboxybetaine such as N-methacryloyloxyethyl-N, N-dimethyl-N,2-ethyl-carboxybetaine (claims 1 and 5), which reads on the claimed sulfonate or carbonate anionic group, and the ammonium cationic group.

12. Regarding claim 44, Samour teaches the betaine unit is sulfobetaine (claim 1) such as N-methacryloyloxyethyl-N, N-dimethyl-N,3-propyl-sulfobetaine and 1g of hydroxyethylmetacrylate (claims 4 and 6) or carboxybetaine such as N-methacryloyloxyethyl-N, N-dimethyl-N,2-ethyl-carboxybetaine (claims 1 and 5), all of which have a non-polymerizable betaine group, therefore the betaine groups can not contribute to the polymer backbone and are pendent groups of the polymer, which reads on the claim.

13. Regarding claim 45, Samour teaches the betaine unit having a formula such as $\text{H}_2\text{C}=\text{CHCONH}-\text{CH}_2\text{CH}_2\text{CH}_2\text{N}^+(\text{R}_3\text{R}_4)(\text{CH}_2)_4\text{SO}_3^-$ (claim 1, when R_2 is propylene, n_1 is 4, X^- is SO_3^-), where the polymerizable acryl group contributes to the backbone of the polymer and forms a polyalkylene hydrocarbon chain with the rest of the unit interrupted by one or more nitrogen or sulfur atoms, which reads on the claim.

14. Regarding claim 46, Samour teaches the betaine unit having a formula such as $\text{H}_2\text{C}=\text{CH}(\text{R}_1)\text{COA}-\text{R}_2\text{N}^+(\text{R}_3\text{R}_4)(\text{CH}_2)_{n_1}\text{SO}_3^-$ (claim 1, when X^- is SO_3^-), which reads on the claimed alkyl sulfonates of dialkylammonium alkyl acrylate when A is oxygen, R_1 is hydrogen; alkyl sulfonates of dialkylammonium alkyl methacrylate when A is oxygen, R_1 is methyl; alkyl sulfonates of dialkylammonium alkyl acrylamido when A is NH, R_1 is

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hydrogen; alkyl sulfonates of dialkylammonium alkyl methacrylamido when A is NH, R₁ is methyl.

15. Regarding claim 47, Samour teaches the betaine monomer having a formula such as $\text{H}_2\text{C}=\text{CH}(\text{R}_1)\text{COA}-\text{R}_2\text{N}^+(\text{R}_3\text{R}_4)(\text{CH}_2)_{n_1}\text{SO}_3^-$ (claim 1, when X⁻ is SO_3^-), which reads on the claimed sulfopropyldimethylammonioethyl methacrylate when A is oxygen, R₁, R₃ and R₄ are methyl, R₂ is ethylene, n₁ is 3; sulfoethyldimethylammonioethyl methacrylate when A is oxygen, R₁, R₃ and R₄ are methyl, R₂ is ethylene, n₁ is 2; sulfobutyldimethylammonioethyl methacrylate when A is oxygen, R₁, R₃ and R₄ are methyl, R₂ is ethylene, n₁ is 4; sulfopropyldiethylammonioethyl methacrylate when A is oxygen, R₁ is methyl, R₂ is ethylene, R₃ and R₄ are ethyl, n₁ is 3; sulfopropyldimethylammoniopropyl acrylamide when A is NH, R₁ is hydrogen, R₃ and R₄ are methyl, R₂ is propylene, n₁ is 3; sulfopropyldimethylammoniopropyl methacrylamide when A is NH, R₁, R₃ and R₄ are methyl, R₂ is propylene, n₁ is 3.

16. Regarding claim 48, Samour teaches the betaine monomer having a formula such as $\text{H}_2\text{C}=\text{CH}(\text{R}_1)\text{COA}-\text{R}_2\text{N}^+(\text{R}_3\text{R}_4)(\text{CH}_2)_{n_1}\text{SO}_3^-$ (claim 1, when X⁻ is SO_3^-), which reads on the claimed formula of SPE after polymerization when A is oxygen, R₁, R₃ and R₄ are methyl, R₂ is ethylene, n₁ is 3 (also see claim 4, 6 and Example for N-methacryloyloxyethyl-N, N-dimethyl-N,3-propyl-sulfobetaine and 1g of hydroxyethylmetacrylate which is SPE); SPP when A is NH, R₁, R₃ and R₄ are methyl, R₂ is propylene, n₁ is 3.

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17. Regarding claim 53, Samour teaches the monomer includes polyethylene glycol methacrylate (claim 1), which reads on the claimed formula.

18. Regarding claim 54, Samour teaches the monomer includes polyglycerol methacrylate having the formula $\text{H}_2\text{C}=\text{C}(\text{CH}_3)\text{COO}(\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH})$ or $\text{H}_2\text{C}=\text{CHCOO}(\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH})$ (claim 1), which reads on the claim.

19. Regarding claim 55, Samour teaches the polymer consisting essentially the betaine units and a polyalkene glycol acrylate/methacrylate or hydroxyethylacrylate (claim 1 and Examples), which reads on the claim.

20. Claims 42-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Nielson (US Patent No. 6133391).

21. Regarding claim 42, Nielson teaches a zwitterionic copolymer comprising from 10 to 50 mole% of N-(3-sulphopropyl)-N-methacryloxy-ethyl-N,N-dimethyl ammonium betaine or N-(3-sulphopropyl)-N-acryloxy-ethyl-N,N-dimethylammonium betaine (claim 1 3, 6 and 12), which reads on the betaine unit and the amount; and 2-(2-ethoxy)ethoxy ethyl acrylate, 2-methoxyethyl acrylate or 2-butoxyethyl acrylate (claim 7), which reads on the claimed alkoxyated unit; or 2-hydroxyethyl acrylate (claim 7), which reads on the claimed hydroxylated unit.

22. Regarding claim 43, Nielson teaches the betaine monomer includes ammonium phosphate, ammonium sulphonate, N-(3-sulphopropyl)-N-methacryloxy-ethyl-N,N-dimethyl ammonium betaine, N-(3-sulphopropyl)-N-acryloxy-ethyl-N,N-dimethylammonium betaine, N-(3-sulphopropyl)-N-methacrylamido-propyl-N,N-dimethyl

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ammonium betaine, 1(3-sulfopropyl)-2-vinyl-pyridinium betaine, N-(3-sulphopropyl)-N,N-diallyl-N-methyl ammonium betaine, or N-(3-sulphopropyl)-N-allyl-N,N-dimethyl ammonium betaine (col. 2, line 32-40), which reads on the claimed sulfonate and phosphate anionic group, ammonium and pyridinium cationic group.

23. Regarding claim 44, Nielson teaches the betaine monomer is N-(3-sulphopropyl)-N-methacryloxy-ethyl-N,N-dimethyl ammonium betaine or N-(3-sulphopropyl)-N-acryloxy-ethyl-n,N-dimethylammonium betaine (claim 1 3, 6 and 12), all of which have a non-polymerizable betaine group, therefore the betaine groups can not contribute to the polymer backbone and are pendent groups of the polymer, which reads on the claim.

24. Regarding claim 45, Nielson teaches the polymer having a betaine group (claim 2), and 2-(2-ethoxy)ethoxy ethyl acrylate, 2-methoxyethyl acrylate or 2-butoxyethyl acrylate (claim 7), which reads on the claimed alkoxyated unit; or 2-hydroxyethyl acrylate (claim 7), which reads on the claimed hydroxylated unit. The betaine monomer unit has unsaturated carbon-carbon bond such as (meth)acryloxy-(C₂₋₄)alkyl, (meth)acrylamido-(C₂₋₄)alkyl or (C₂₋₆)alkenyl (col.2, line 25-29), which contributes to the backbone of the polymer and form a polyalkylene hydrocarbon chain with the rest of the betaine unit interrupted by one nitrogen or more nitrogen or sulfur atoms , which reads on the claim.

25. Regarding claim 46-47, Nielson teaches the betaine monomer includes N-(3-sulphopropyl)-N-methacryloxy-ethyl-N,N-dimethyl ammonium betaine, N-(3-sulphopropyl)-N-acryloxy-ethyl-n,N-dimethylammonium betaine , N-(3-sulphopropyl)-N-

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methacrylamido-propyl-N,N-dimethyl ammonium betaine, 1(3-sulfopropyl)-2-vinylpyridinium betaine, N-(3-sulphopropyl)-N,N-diallyl-N-methyl ammonium betaine, or N-(3-sulphopropyl)-N-allyl-N,N-dimethyl ammonium betaine (col. 2, line 32-40), which reads on the claimed group.

26. Regarding claim 48, Nielson teaches the betaine monomer is N-(3-sulphopropyl)-N-methacryloxy-ethyl-N,N-dimethyl ammonium betaine (col.2, line 32-35), which reads on SPE, or N-(3-sulphopropyl)-N-methacrylamido-propyl-N,N-dimethyl ammonium betaine (col.2, line 32-35), which reads on SPP.

27. Regarding claim 49, Nielson teaches the comonomer is 2-(2-ethoxy) ethoxy ethyl acrylate, 2-methoxyethyl acrylate or 2-butoxyethyl acrylate (claim 7), which reads on the claimed alkoxylated unit.

28. Claims 42, 43, 46-52, 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Aubay (PGPub. US2002/0065208A1).

29. Regarding claim 42 and 57, Aubay teaches a polymer which has a cationic charges to the anionic charges of 50/50 ([0105]), which reads on the claimed zwitterionic polymer, comprising amphoteric monomer units ([0100]) such as N, N-dimethyl-N-methacryloylethyl-N(3-sulpho-propyl)ammonium sulphobetaine (SPE), N, N-dimethyl-N(2-methacrylamidoethyl)-N-(3-sulpho-propyl) ammonium betaine (SPP), 1-vinyl-3-(3-sulphopropyl)imidazolidium betaine or 1-(3-sulphopropyl)-2-vinylpyridinium betaine ([0051]), which reads on the claimed units having a betaine group with a

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cationic group and an anionic group; and comonomer unit ([0101]) such as polyethylene oxide methacrylate (Bisomer S20 W), polyoxyethylene-behenylmethacrylate, or polyoxyethylene ω -tristyrylphenyl methacrylate ([0061]), which reads on the claimed alkoxylated units.

Aubay further teaches the betaine unit can be as much as 20% by weight of the composition ([0100]), the alkoxylated comonomer is therefore 10% at most, which is equivalent to 93 mole% of betaine unit and 17% of alkoxylated comonomer unit based on the molecular weight of SPE (molecular weight 279 g/mole) and polyethylene oxide methacrylate (Bisomer S20 W, molecular weight 2080g/mole), which reads on the claimed amount.

30. Regarding claim 43, Aubay teaches the betaine unit is N, N-dimethyl-N-methacryloyl-ethyl-N-(3-sulpho-propyl)ammonium sulphobetaine (SPE), N, N-dimethyl-N-(2-methacrylamidoethyl)-N-(3-sulpho-propyl) ammonium betaine (SPP), 1-vinyl-3-(3-sulphopropyl)imidazolidium betaine or 1-(3-sulphopropyl)-2-vinylpyridinium betaine ([0051] and claim 11), which reads on the claimed sulfonate anionic group and ammonium, pyridinium, imidazolinium cationic group.

31. Regarding claim 46-48, Aubay teaches the betaine unit is N, N-dimethyl-N-methacryloyl-ethyl-N-(3-sulpho-propyl)ammonium sulphobetaine (SPE), N, N-dimethyl-N-(2-methacrylamidoethyl)-N-(3-sulpho-propyl) ammonium betaine (SPP), 1-vinyl-3-(3-sulphopropyl)imidazolidium betaine or 1-(3-sulphopropyl)-2-vinylpyridinium betaine ([0051] and claim 11), which reads on the claimed group.

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32. Regarding claim 49, Aubay teaches the alkoxyated units are polyethylene oxide methacrylate (Bisomer S20 W), polyoxyethylene-behenylmethacrylate, or polyoxyethylene ω -tristyrylphenyl methacrylate ([0061]), which reads on the claimed formula.

33. Regarding claim 50, Aubay teaches the alkoxyated unit is polyethylene oxide methacrylate (Bisomer S20 W) ([0061]), which has a formula of $H_2C=C(CH_3)COO(CH_2CH_2O)_xCH_3$ and approximately 45 EO unit ($x=45$) as evidenced by the product data sheet by Cognis, which reads on the claimed n and R^7 .

34. Regarding claim 51, Aubay teaches the alkoxyated unit is polyoxyethylene-behenylmethacrylate ([0061]), which has a formula of $H_2C=C(CH_3)CO_2(CH_2CH_2O)_n(CH_2)_{21}CH_3$ and approximately 25 EO unit ($n=25$ based on the average molecular weight) as evidenced by the product data sheet by Aldrich, which reads on the claimed n and R^7 .

35. Regarding claim 52, Aubay teaches the alkoxyated unit is polyoxyethylene ω -tristyrylphenyl methacrylate ([0061]), which reads on the claim.

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

37. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

38. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

39. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Samour (US Patent No. 3671502).

Regarding claim 56, Samour teaches the same range of mol% of the monomers (col.2, line 46-47, Examples) in the polymer composition as claimed (see Paragraph 9 above) and the same total percentage. Reasonable basis exist to expect that the composition exhibit substantially similar weight –average molecular mass as claimed. Therefore it would have been obvious for a person of ordinary skill in the art at the time

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the invention was made that the composition taught by Samour displays similar weight – average molecular mass, because weight-average molecular mass attributes to the mol% of the monomers.

40. Claims 42, 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Argillier (US Patent No. 6410671 B1) in view of Samour (US Patent No. 3671502).

41. Regarding claim 59, Argillier teaches a drilling fluid comprising zwitterionic polymers (Argillier, claim 12) derived from sulfobetaines or phosphobetaines (claim 1) and acrylamides or acrylates.

Argillier further teaches the zwitterionic polymer is efficient as viscosifying agents for aqueous solutions within a wide salinity and temperature range (Argillier, col.1, line 25-30).

Argillier does not teach the zwitterionic polymer derived from alkoxyated or hydroxylated acrylate or acrylamide.

In pertinent art, Samour teaches the zwitterionic polymer derived from sulfobetaines and alkoxyated or hydroxylated acrylate or acrylamide as applied to claim 42 above.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to employ Samour's zwitterionic polymer, within the composition of Argillier's drilling fluid, for the benefit of a high viscosifying effect, because Samour's polymer is also zwitterionic and can tolerate a wide salinity range.

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42. Regarding claim 60, Argillier teaches the polymer content is 1.1% in the drilling fluid (Argillier, col.15, line 48-52; col. 16, line 44-48 and col.17, line 1-15), which reads on the claimed range.

43. Regarding claim 61, Argillier teaches the zwitterionic polymer can be used as clay swelling inhibition agent (Argillier, col.1, line 47), rheology control agent (Argillier, col.1, line 38), filtrate reducing agent (Argillier, col.1, line 47), or limiting friction of fluids (Argillier, col.1, line 43), which reads on the claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AIQUN LI whose telephone number is (571)270-7736. The examiner can normally be reached on Monday -Thursday, 9:00 am - 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571)2721206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AL/

/Angela Ortiz/

Supervisory Patent Examiner, Art Unit 4151